

What is claimed is:

1. An apparatus for canceling a leakage signal using an even harmonic mixer comprising:

5 an in-phase dividing means for dividing a first signal inputted from a first exterior means into first in-phase signals;

10 a phase dividing means for dividing a second signal inputted from a second exterior means into second out-of-phase signals of which a phase difference is 90° ;

15 an even harmonic mixing means for outputting out-of phase radio frequency (RF) signals of which the phase difference is 90° , after even-harmonic mixing of the first in-phase signals outputted from the in-phase dividing means and the second out-of-phase signals outputted from the phase dividing means;

an RF signal phase combining means for canceling an image signal by combining the out-of-phase RF signals outputted from the even harmonic mixing means; and

20 a band pass filter (BPF) for canceling a residual component of the leakage signal in the RF signals outputted from the RF signal phase combining means.

2. The apparatus as recited in claim 1, wherein the even harmonic mixing means includes:

25 a first even harmonic mixing means for outputting a first RF signal by mixing a quadrature phase second signal outputted from the phase dividing means with an RF signal, using one of

the first in-phase signals outputted from the in-phase dividing means; and

a second even harmonic mixing means for outputting an in-phase second signal outputted from the phase dividing means with the RF signal, using the other of the first in-phase signals outputted from the in-phase dividing means.

3. The apparatus as recited in claim 2, wherein the harmonic mixing means includes:

a multiplexer for mixing the second out-of-phase signals outputted from the phase dividing means and the first in-phase signals outputted from the in-phase dividing means; and

an anti parallel diode pair (APDP) for suppressing a basic frequency and an RF component, and simultaneously, mixing odd number of RFs of the LO signal and suppressing an even number of RFs of the LO signal.

4. The apparatus as recited in claim 3, wherein the APDP includes Schottky barrier diodes.

5. A method for canceling a leakage signal using an even harmonic mixer, the method comprising the steps of:

a) dividing a first signal inputted from a first exterior means into first in-phase signals;

b) dividing a second signal inputted from a second exterior means into second out-of-phase signals of which the phase difference is 90° ;

c) generating out-of-phase RF signals of which the phase difference is 90° , after even-harmonic mixing of the first in-phase signals and the second out-of-phase signals;

d) canceling out an image signal by combining the out-of-
5 phase signals; and

e) canceling out a residual component of the leakage signal in the RF signal.

6. The method as recited in claim 5, wherein the step c)
10 includes the steps of:

c1) mixing a quadrature phase second signal outputted from the phase dividing means with an RF signal, using one of the first in-phase signals; and;

c2) mixing an in-phase second signal outputted from the
15 phase dividing means with the RF signal, using one of the first divided signals.